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Practitioner's Docket No. MWH-0029US ***PATENT***

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Stephen B. Liggett

Application No.: 09/856,803
Filed: May 25, 2001

Group No.: 1634
Examiner: Carla Myers

For: Polymorphisms in the 5′ Leader Cistron of the β_2-Adrenergic Receptor

Assistant Commissioner for Patents
Washington, D.C. 20231

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that the following papers are being facsimile transmitted to the Patent and Trademark Office at (703) 872-9306 on the date shown below:

1. Response to Restriction Requirement mailed 9/20/02 (4 Pages)

Gisela M. Field

10-21-02
Date

Gisela M. Field
Signature

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RESPONSE TO RESTRICTION REQUIREMENT

This paper is submitted in response to the restriction requirement mailed September 20, 2002, which required restriction between the following groups: Group I, claims 1-8 and 11; Group II, claims 9-10 and 12; Group III, claims 13-15; Group IV, claims 14-16; Group V, claims 18, 28, and 29; Group VI, claims 19-20; Group VII, claims 19-10; Group VIII, claims 21 and 23; and Group IX, claims 26-27.

ELECTION

Applicants hereby provisionally elect, with traverse, Group I, claims 1-8 and 11. In addition, the restriction requirement required Applicants to elect a polymorphism selected from the group consisting of –20PS, +46PS, +79PS, +100PS, and +491PS and/or a single polynucleotide if the elected invention involved genotyping and/or was in Groups I or III. In a telephone call to Examiner Carla Myers on October 10, 2002, Applicants' undersigned agent explained that the claims in Group I and III are not directed to methods for genotyping multiple polymorphic sites nor to polynucleotide sequences that each encompass different polymorphic sites. Rather, the claims in Group I are directed to a single method of genotyping the 5′ leader cistron polymorphic site (5′ LC PS), which is described in the specification as a single site of polymorphic variation at nucleotide 1541 in Figure 1 (See p. 3, lines 18-22; p. 6, lines 29-30; and elsewhere throughout the specification). Applicants' agent further explained that the claims in Group III are directed to various genotyping oligonucleotides to detect the allele present in an individual at this single polymorphic site and thus, the nucleotide sequences disclosed in SEQ ID NOs:5-10 are indeed structurally and functionally related. The Examiner agreed that upon election of a group, Applicants did not have to further elect a polymorphic site to be genotyped

nor did Applicants have to further elect a single polynucleotide selected from SEQ ID NOs:5-10, but that these SEQ ID NOs would be treated as one group. Applicants have made their election accordingly and traverse the restriction requirement for the following reasons.

REMARKS

The first reason for traversing the restriction requirement is that the finding of lack of unity for Group I is improper because the Patent Office has failed to demonstrate that the claims in this group lack a special technical feature over the art. Claims 1-8 and 11 are directed to a single method of genotyping the β_2AR gene present in an individual comprising determining the nucleotide pair at the *novel* 5′ LC PS present in *both* copies of the individual's β_2AR gene (emphasis added). The Patent Office argues that these claims are broadly drawn to methods for genotyping the β_2AR gene by sequencing the 5′ leader cistron and that this method of sequencing was known in the art as allegedly disclosed in Edmorine et al., *Proceedings of the National Academy of Science*, USA (1987) 84: 6995-6999. Applicants respectfully submit that Edmorine et al., do not teach every limitation of these claims and thus, cannot be anticipatory.

In order for a claim to be anticipated by the prior art, all the limitations of that claim must be contained in a single source of prior art. The special technical feature of claims 1-8 and 11 is determining the identity of the nucleotide pair at the novel polymorphic site in the 5′ leader cistron of the β_2AR gene. As described in the specification, a nucleotide pair is defined as the nucleotides found at a polymorphic site on corresponding strands of the *two copies* of a chromosome in an individual. The Patent Office does not allege that this polymorphic site was previously known in the art or disclosed in Edmorine et al., but implies that detection of the nucleotide pair is inherent in the sequencing method disclosed in this reference. However, Edmorine et al. disclose the sequencing of a single β_2AR clone, which contains only one copy of the two β_2AR gene copies present in the individual from which this clone was derived. As would be evident to the skilled artisan, sequencing this clone may inherently provide the identity of the *nucleotide* at the claimed novel polymorphic site on *one* of the two copies of that individual's chromosome, but would provide no information about the identity of the nucleotide present at that polymorphic site on the *other* copy of the individual's chromosome, and thus can not inherently provide the identity of the nucleotide *pair* present at that site on *both* copies of the β_2AR present in that individual. Indeed, the specification teaches that at least five different clones will typically need to be examined to have more than a 90% probability of obtaining information for both copies of the β_2AR gene in an individual (see p. 14, lines 1-3). Since the sequencing method

disclosed in Edmorine et al., does not allow one to determine the identity of the *nucleotide pair* at the 5′ LC PS for both copies of the β_2AR gene, as required by all the claims in Group I, Applicants respectfully submit that claims 1-8 and 11 do share a special technical feature that is novel over the art cited by the Patent Office.

The second reason for traversing the restriction requirement is the restriction between Group I, Group V, and Group IX. The claims in Group V are directed to methods for predicting a genotype in the β_2AR coding block comprising genotyping the β_2AR 5′ LC PS and the claims in Group IX are directed to methods of predicting a patient's response to an agonist comprising determining the patient's genotype at the β_2AR 5′ LC PS. The Patent Office argues that each of the claimed methods are patentably distinct from each other because they involve different method steps and have different objectives.

Applicants are unaware of any rule or law stating that method claims must have the same objective to have unity of invention. Rather, unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" is defined in Rule 13.2 as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art.

As described above, the technical feature of the claims in Group I is that they involve determining the identity of the allele present at the *novel* 5′ LC PS in *both* copies of the individual's β_2AR gene. Applicants respectfully assert that this technical feature is shared by the claims in Group V and IX, which comprise the step of determining the individual's genotype for the 5′ LC PS. As defined in the specification, a genotype is the unphased 5′ to 3′ sequence of nucleotide pair(s) found at one or more polymorphic sites in a locus on a pair of homologous chromosomes in an individual (p. 7, lines 21-23). Thus, since all the claims in Groups I, V, and IX share the novel technical feature of determining the identity of the nucleotide pair at the novel 5′ LC PS on both chromosomes present in the individual, which defines the contribution each makes over the prior art, Applicants respectfully request withdrawal of the restriction requirement between groups I, V, and IX.

It is believed that no additional fees are due, however if that is incorrect, Applicants hereby authorize you to debit deposit account 50-1293. Should any questions arise regarding this submission, please contact the undersigned agent at the phone number below.

Respectfully Submitted,

Date: Oct. 21, 2002

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